



The Business Case for Healthy Buildings:

Insights from Early Adopters



Urban Land
Institute

Center for Sustainability
and Economic Performance

About the Urban Land Institute

The Urban Land Institute is a global, member-driven organization comprising more than 40,000 real estate and urban development professionals dedicated to advancing the Institute's mission of providing leadership in the responsible use of land and in creating and sustaining thriving communities worldwide.

ULI's interdisciplinary membership represents all aspects of the industry, including developers, property owners, investors, architects, urban planners, public officials, real estate brokers, appraisers, attorneys, engineers, financiers, and academics. Established in 1936, the Institute has a presence in the Americas, Europe, and Asia Pacific regions, with members in 76 countries.

The extraordinary impact that ULI makes on land use decision making is based on its members sharing expertise on a variety of factors affecting the built environment, including urbanization, demographic and population changes, new economic drivers, technology advancements, and environmental concerns.

Peer-to-peer learning is achieved through the knowledge shared by members at thousands of convenings each year that reinforce ULI's position as a global authority on land use and real estate. In 2017 alone, more than 1,900 events were held in about 290 cities around the world.

Drawing on the work of its members, the Institute recognizes and shares best practices in urban design and development for the benefit of communities around the globe.

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About the Center for Sustainability and Economic Performance

The ULI Center for Sustainability and Economic Performance is dedicated to driving more sustainable, environmentally responsible, and profitable outcomes in real estate development and investment, and to helping ULI members create healthy, resilient, and resource-efficient communities around the world. The center advances knowledge and catalyzes adoption of transformative market practices and policies that lead to improved sustainability, health, resource efficiency, and resilience.

About this Report

Inspired by a growing body of evidence that healthy buildings can have a positive effect on both human health and real estate performance, this report highlights the key certification standards in use in the marketplace, explores recent research on the impact of health-promoting design, and offers profiles of five projects that have been early adopters of healthy building and workplace design and management practices.

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Acronyms

ANSI	American National Standards Institute
ASID	American Society of Interior Design
BIFMA	Business + Institutional Furniture Manufacturers Association
BREEAM	Building Research Establishment Environmental Assessment Method
CO ₂	Carbon Dioxide
GSA	U.S. General Services Administration
IWBI	International Well Building Institute
LEED	Leadership in Energy and Environmental Design
NOI	Net Operating Income
REIT	Real Estate Investment Trust
ROI	Return on Investment
VOC	Volatile Organic Compounds
VOI	Value on Investment

The Business Case for Healthy Buildings: Insights from Early Adopters

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PART I: Healthy Buildings: The Business Case

“Our decision to pioneer WELL certification reflects our belief that the office environment can, and should, add to the health of our people, and that true market leadership is about taking bold steps for the future.”

—Mark Renzoni, President and CEO of CBRE Limited, Canada

“Sixty-seven percent of U.S. building owners are interested in creating healthier buildings for people.”

—*The Drive Toward Healthier Buildings 2016: Tactical Intelligence to Transform Building Design and Construction*, Dodge Data & Analytics SmartMarket Report

Introduction

Inspired by a growing body of evidence that healthy buildings can have a positive effect on human health and productivity and the corporate bottom line, this report highlights the key standards being used in the marketplace and the returns on investment being realized for developing environments that support health and wellness. It reviews the evidence and profiles some early-adopter projects that have been shown—quantitatively and qualitatively—to have had a positive impact on people's lives and companies' finances through healthy building design, construction, and management.

The emphasis on health and wellness is a growing global phenomenon. The global wellness real estate industry, valued at \$134 billion in 2017, has increased 6.4 percent annually since 2015, and is headed toward being a \$180 billion industry by 2022, according to the Global Wellness Institute (GWI).

Supported by a growing body of research indicating that some chronic health conditions can be prevented or reversed with lifestyle

changes, and that health-promoting design can enhance productivity and reduce employee turnover and absenteeism, real estate leaders worldwide are looking to create environments that support the healthy lifestyles that employees seek in workplaces—where they spend one-third to one-half of their waking hours—and in homes that provide a platform for healthy lifestyles.

The opportunity to promote health and wellness through real estate practice is why, in 2013, the Urban Land Institute launched the Building Healthy Places Initiative, which is working to make health a focus of real estate development and land use decision making.

From Los Angeles to London and beyond, developers, investors, building owners and managers, and leasing firms for office, mixed-use, and residential projects are looking to learn from the early adopters and promote the next generation of high-performing buildings focused on health and wellness.

What is a Healthy Building?

Homes, offices, schools, and other indoor environments are being transformed by health and wellness design principles. Many of these principles are not new: human-centered design concepts are age-old, honored foundations for development. Recent research, however, has led to use of evidence-based designs and technologies to create new environments with healthier materials and with the intent to promote active and healthy choices and emotional and physical well-being, as well as a shared sense of community.

ULI's Building Health Places Toolkit, published in 2015, provides 21 evidence-based recommendations for promoting health

in real estate developments. The recommendations are grouped in three categories: physical activity, healthy food and drinking water, and healthy environment and social well-being.

For residences and other building types, healthy building features can include design elements that encourage multigenerational outdoor activity (playground equipment, community gardening, easy access to a local bike or walking trail), access to local healthy food options nearby (grocery stores and farmers markets), resident social engagement, and pet-friendly policies.

In the workplace, a healthy environment offers a place that employees want to be every day, and where they can focus on their work and be productive—while also keeping their immune systems up and stress levels down. Healthy workplaces can feature a wide range of design and construction elements, including flexible open space for collaboration, activities, and events. They provide a variety of workspaces, from meeting areas to quiet zones, that offer choices on where to work. Adjustable controls for air temperature, humidity, and acoustics help create a comfortable work environment. Biophilic design, with natural views and materials, connect people to nature. And showers and lockers serve employees who run or bike to work or exercise during the day.

Other elements of a healthy workplace, according to CBRE's 2016 report *Wellness in the Workplace: Unlocking Future Performance*, include the following:

Building Design and Construction:

- Stairways with enticing artwork, enhanced lighting, and other design elements encourage people to use the stairs instead of elevators.
- Advanced lighting is designed to help people see as clearly as possible and to avoid disrupting natural 24-hour circadian rhythms (sleep/wake cycle) with brightness and color spectrum adjustments to mimic the solar clock and its effects on the brain.
- Biophilic air treatment cleans the air with plants that filter carbon dioxide (CO₂) and volatile organic compounds (VOCs) and provides fresh oxygen for interior spaces as well as a restorative effect on the mind.

Office Management Strategies:

- Cardiovascular equipment like treadmill desks get employees out of their seats and moving to improve circulation.
- Advanced water purification systems reduce the presence of disinfectant byproducts, chlorine, pesticides, and some pharmaceutical and personal care products.
- Drinking-water stations at convenient locations encourage employees to hydrate.
- Stretching and relaxation areas on each floor encourage employees to stay limber and provide a place to nap, meditate, practice yoga, and recharge.

Office Programming:

- A wellness concierge provides health and wellness guidance on request.
- Nutritious snacks and dietary information on display promote healthy eating habits.
- A juice station offers nutritious snacks from fruits and vegetables.

Occupant health and well-being ranked high in a national survey of building owners, architects, and interior designers conducted by Dodge Data & Analytics and published in the firm's report, *The Drive Toward Healthier Buildings 2016*. Two-thirds of building owners ranked occupant health and well-being as "moderately important," ahead of return on investment and tenant demand, while three-quarters of architects ranked health/well-being as "important," and 83 percent of interior designers ranked health and well-being as "most important" in influencing design and construction decisions.

		Improved performance (based on objective experiment)	Improved performance (based on interviews)	% of participants who felt more energised	% of participants who felt happier	% of participants who felt healthier
Natural Space	More Plants on the Work Floor	+10%	+10%	76%	78%	65%
Right Lighting	Circadian Lighting	+12%	+18%	71%	76%	50%
Healthy Nutrition	Healthy Alternatives to Sugar and Caffeine	+45%	+20%	78%	66%	52%
Mental Balance	Meditation, Yoga, Powernaps, and Massages at Work	+30%	+16%	66%	63%	53%
Physical Exercise	Less Sitting Down, More Exercise	+12%	+11%	65%	36%	71%

[Chart: CBRE Healthy Research at a Glance, pages 1-2: <https://cbrenl.uberflip.com/i/823602-the-snowball-effect-of-healthy-offices/9>]

Skanska's Healthy Headquarters

Skanska's remodeled Northern Hub in Doncaster, United Kingdom, saw 3.5 times fewer building-related sick days than other U.K. offices, saving the company £28,000 (US\$37,500) in staff costs in 2015. Improved acoustics, indoor air quality, and access to daylight boosted employee satisfaction with the office by 20 percent.



How do we measure and align building performance with human performance?

FITWEL FRAMEWORK

HEALTH IMPACT CATEGORIES

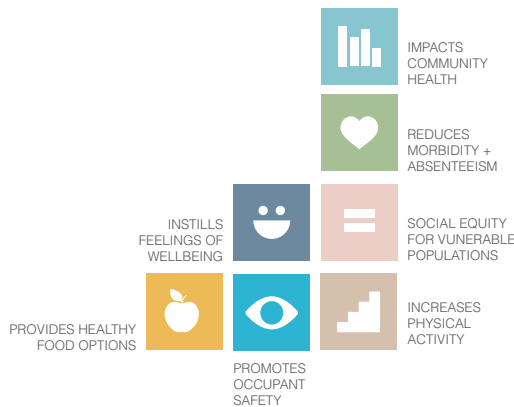


Photo courtesy of The Tower Companies

Earlier this year, The Tower Companies completed the first Fitwel certified residential project at The Pearl, in Silver Spring, MD. The Pearl received a 2-Star Fitwel Rating by incorporating nearly 50 unique evidence-based design and policy strategies that support the physical, mental, and social health of its residents.

Health and Wellness Certification Systems for Buildings

Many developers, building owners, leasing companies, investors, architects, and others in the real estate industry are looking to healthy building certification programs to guide new design and construction and fit-outs of existing spaces.

Globally, and particularly in the United States, two key standards have emerged in the real estate industry—Fitwel and the WELL Building Standard. Established sustainable building standards, such as Leadership in Energy and Environmental Design (LEED), Building Research Establishment Environmental Assessment Method (BREEAM), and the Living Building Challenge, also contain health-related elements. Some

real estate industry leaders have developed multiple buildings under one certification system, while others have sought certification from both Fitwel and WELL, depending on the needs of their project.

Healthy buildings also are being designed and built according to custom standards, though the advantages of working through the Fitwel or WELL certification process include their use of specific scientifically derived standards to guide investments and the assurance of third-party verification. Both systems reference existing standards and best practice guidelines set by the U.S. government and professional organizations for sustainable and healthy buildings.

Fitwel Certification System

The U.S. Centers for Disease Control and Prevention (CDC) and U.S. General Services Administration (GSA) in 2011 partnered with New York City to develop Fitwel, a rating system for optimizing buildings in support of health. Designed initially for healthy fit-outs of existing buildings, Fitwel was piloted in 89 GSA buildings.

Fitwel's evidence-based criteria are informed by a team of advisers from public health, design, development, statistics, and research, and are supported by more than 3,000 research studies. The Fitwel standard focuses on 12 wellness health factors: location, building access, outdoor spaces, ground floor, stairwells, interior environmental quality, workspaces, shared spaces, water supply, cafeterias, vending machines, and emergency procedures.

In 2016, the Center for Active Design (CfAD), a not-for-profit organization that works globally to promote health through design, was selected by the federal government as the sole operator and third-party certifier for Fitwel.

CfAD fully launched Fitwel for use in the private sector in March 2017. Certification is available for multitenant base and whole buildings, single-tenant buildings, commercial interior space, and multifamily residential buildings.

Fitwel-certified projects receive one to three stars based on points earned on a scorecard that includes more than 55 evidence-based design and operational strategies that support physical, mental, and social health of building occupants. Each strategy is linked to one of seven health impact categories: community health, absenteeism and morbidity, promotion of well-being, healthy food options, physical activity, safety, and social equity for vulnerable populations.

Projects are scored on numerous metrics. For example, a building earns points for having a staircase connecting the entrance to every floor; more points if the staircase is equally or more visible than elevators or escalators; additional points if the stairwell has art, music, or other amenities; and still more points if it is prominently located or visible through glass. The point system relates to behavioral science: people are more likely to use the stairs if they can see them and if they seem safe and pleasant.

Fitwel certification criteria are free and available online at www.fitwel.org. Project registration currently costs \$500, and certification fees are currently \$6,000 per project. Certification is conducted through a double-blind process, with two independent reviewers assessing each project and then

Fitwel Market Update - June 2018

- Building types: New/existing office (base and whole building), commercial tenant fit-outs, education/institution, multifamily residential
- Projects certified or pending certification: 95
- Projects registered: 620, with 942 users and 661 Fitwel ambassadors in 22 countries
- Alignment: with BREEAM and other green-rated building systems
- Incentives: Fannie Mae Healthy Housing Rewards incentives for multifamily affordable housing
- Leading U.S. cities, in order of most certified projects: New York City, San Francisco, Washington, D.C., Los Angeles, Denver
- Cost: \$500 registration for annual access; \$6,000 certification
- Recertification: \$500 annual registration fee plus 80 percent of current certification rate

confirming a numerical score to ensure review is unbiased and consistent. Projects must be recertified every three years to ensure that they continue to perform to the standard.

Certification qualifies developers for access to the Fannie Mae Healthy Housing Reward program, which offers below-market-rate loan pricing for borrowers who incorporate

WELL Building Standard

Pioneered in 2012 by Delos, a New York City–based wellness real estate and technology firm, the WELL Building Standard was launched in 2014 by the International WELL Building Institute (IWBI) as a performance-based system for measuring, certifying, and monitoring features of the built environment that affect human health and well-being. WELL combines best practices in building design, construction, and management with evidence-based medical and scientific research on environmental health, behavioral factors, health outcomes, and demographic risk factors that affect health.

Scientists, health care practitioners, and public health and building professionals developed the standard's ten core concepts of building performance that support and advance human health: air, water, nourishment, light, movement, thermal comfort, sound, materials, mind, and community.

In 2017, IWBI launched the WELL Community Standard pilot, a district-scale rating system for healthy communities, and in May 2018 it unveiled WELL v2, the next iteration of the WELL Building Standard. Certification of buildings and communities and the WELL AP professional credentialing program are third-party administered through IWBI's collaboration with Green Business Certification Inc.

WELL projects are certified according to three levels—Silver, Gold, and Platinum. Silver level is achieved by meeting 100 percent of WELL preconditions applicable to the project

health-promoting design features in new construction or rehabilitation of multifamily affordable properties.

The number of certified projects increased from eight in 2017 to 95 as of June 2018, with Fitwel's global reach doubling from 11 countries to 22. Fitwel in June 2018 had 942 global users and 661 trained Fitwel Ambassadors.

type in all concepts; Gold by meeting all WELL preconditions, plus 40 percent or more of the optimization features; and Platinum by meeting all WELL preconditions plus 80 percent or more of the optimization features. As of June 2018, 168 million square feet of projects had been registered in 34 countries, with 101 projects certified.

WELL standards are free and available online at www.wellcertified.com. Overall pricing is now calculated at a flat rate per square foot. Registration fees currently range from \$1,500 to \$10,000, depending on square footage and project type, and include ongoing technical support from a WELL coaching contact. Certification and support, including an on-site verification component, range from \$0.18 to \$0.58 per square foot. Projects must be recertified every three years, at a cost of \$0.05 to \$0.17 per square foot.

Certified projects have varied considerably regarding hard and soft costs. A few early adopters completed their fit-outs for less than \$1 per square foot (\$10.76 per sq m) in additional costs. For other early adopters, the cost of WELL ranged from \$1 to \$4 per square foot (\$10.76 to \$43.04 per sq m). Acoustics (reducing noise in an open office), enhanced HVAC filtration and zone control (cleaner indoor air), and increased employee access to nourishment (replacing vending machines with cafés and kitchens stocked with healthy snacks) were the largest expense categories.

THE WELL BUILDING STANDARD™

SEVEN CONCEPTS FOR HEALTHIER BUILDINGS



Air



Water



Nourishment



Mind



Light



Fitness



Comfort



Eric Laignel

The American Society of Interior Designers (ASID) headquarters office was the first space in the world to achieve both Platinum Level Certification for WELL™ and LEED, under the LEED ID+C rating system. In 2017, ASID reported that CO2 levels were down 60 percent, sound levels decreased by 50 percent, Collaborative work increased 9 percent, and Productivity increased by 16 percent, yielding an estimated \$694,000 financial benefit.

WELL Market Update - June 2018

- Building types: All types, including new/existing office (core, interior fit-outs), education/institution, multifamily residential
- Projects certified: 101
- Projects registered: 887 in 34 countries, 200-plus cities, 168 million square feet
- Alignment: aligns with LEED, Living Building Challenge, and other green-rated building systems
- Leading U.S. cities, in order of most certified projects: Los Angeles, New York City, San Francisco, Chicago, Boston
- Cost: Registration—\$1,800 to \$4,200, depending on square footage up to 1 million square feet; performance verification—contracted separately; certification—\$7,500 minimum
- Recertification: \$2,250 minimum

“The average person spends about 90 percent of their time indoors, which has important implications for the wellbeing of building occupants.”

—*The 9 Foundations of a Healthy Building*, Harvard T.H. Chan School of Public Health

New Research: Connections among Health, Productivity, and Building Design

Although no comprehensive study exists on the effects of healthy buildings, a growing body of research is enhancing our understanding of the interaction between buildings and human health and wellness.

This section summarizes some key recent studies that look at the intersection of personal and public health, productivity, and building design.

Harvard University Study: Health, Productivity, and Building Design are Closely Connected

In 2017, a multidisciplinary team of experts from the Healthy Buildings Program at Harvard University's T.H. Chan School of Public Health published *The 9 Foundations of a Healthy Building*. The report examined all building types but focused on studies related to commercial office spaces.

Highlights from the report include the following:

People work more efficiently in environments with good air quality. Common indoor pollutants that pose risks to human health include nitrogen oxides, carbon monoxide, ozone, particulate matter, and volatile organic compounds (VOCs) found in building materials, printer emissions, cleaning supplies, paint, glue, furniture, and other materials. Exposure has been linked to numerous health problems, such as cancer and respiratory diseases, as well as absenteeism, poor productivity, and low cognitive function.

Buildings constructed with low-VOC materials and finishes reduce exposure to these toxic substances. Studies show employees who work in buildings where fresh air is adequately circulated and distributed are more productive and healthier than those who work in poorly ventilated spaces. A low-VOC, high-ventilation office space with superior air quality improves cognitive function by as much as 101 percent.

Comfortable temperature and humidity levels are less likely to make workers feel sick or get sick. A study on workplace thermal conditions found that workers experienced itchy and watery eyes, headaches, and throat irritation when exposed to poor ventilation, humidity, and heat. When indoor environments are too

warm, occupants can experience symptoms of “sick building syndrome,” such as headaches, dizziness, fatigue, and flu-like systems, as well as negative moods, heart rate changes, and respiratory problems. Temperature and humidity may also influence disease transmission: cold dry environments are more likely to spread the flu virus, and warm, humid environments are conducive to growth of mold and fungus.

Good lighting leads to better sleep at night and better productivity during the day. Lack of natural light has been associated with physiological and sleep problems and depression. Daylight exposure and access to windows at work has been linked to better sleep duration, an improved mood, less sleepiness, lower blood pressure, and increased physical activity. Office workers with access to natural light have a better circadian rhythm—important for sound sleep and cognitive functioning. Electric lighting that adjusts for intensity and color spectrum, mimicking solar light and darkness levels at different times of the day and night, can support a healthy circadian rhythm.

Reducing the noise level improves productivity and job satisfaction. With about 70 percent of U.S. offices now having an open floor plan, more workers are susceptible to distractions from noise. A survey of more than 1,200 senior executives and nonexecutive employees found that 53 percent reported ambient noise reduced their work satisfaction and productivity. Environmental noise exposure can increase accidents and impair employee performance and productivity, especially during difficult and complex tasks, and has been linked to higher blood pressure, changes in heart rate, and hypertension.

CBRE Netherlands Study: Healthy Offices Reduce Employee Burnout

In response to a rising employee burnout rate at its Amsterdam office—even though Dutch people are among the happiest and healthiest in the world—CBRE Netherlands conducted a study of workplace wellness in collaboration with the University of Twente. The study involved the participation of 124 CBRE employees over seven months, as well as researchers in neurocognitive psychology, biomedical engineering, and business. The research team analyzed objective data and interviews about how employees felt and their work performance.

Results from the 2016 study, found in CBRE's *The Snowball Effects of Healthy Offices*, include:

- People exposed to “healthy spots” with nature murals and live and even artificial plants perceived their work performance to be 10 percent better, and 76 percent felt more energized, 78 percent felt happier, and 65 percent felt healthier.
- Installation of a lighting system with a timer on a circadian-friendly schedule that adjusted the brightness and color of lighting throughout the day led people to say their work performance was 18 percent better, and 71 percent felt more energized, 76 percent felt happier, and 50 percent felt healthier.
- Healthy alternatives to sitting in standard office chairs—such as holding walking meetings and using medicine balls, treadmills, stationary bikes, and standing conference tables—prompted people to perceive that their work performance improved by 12 percent, and 65 percent felt more energized, 36 percent felt happier, and 71 percent felt healthier.
- Selection of healthy snacks and drinks rather than usual vending machine fare led people to say their work performance had improved 20 percent, and 78 percent felt more energized, 66 percent felt happier, and 52 percent felt healthier.
- Engaging in meditation, yoga, power naps, and massage at work led people to say their work performance was 16 percent better, and 66 percent felt more energized, 63 percent felt happier, and 53 percent felt healthier.
- Many employees took their healthy environment and lifestyle changes home with them, leading to a “snowball effect” that magnified the positive workplace changes.

Cross-over with Sustainability

Healthy building certification systems complement and in some cases overlap with green-building rating systems and certification programs such as LEED, the Living Building Challenge, and BREEAM. Increasingly, high-performance buildings are being designed and built to achieve both environmental and human health and wellness goals—and both kinds of certification. National Green Building Councils worldwide are championing healthy green buildings through research, certification, and rating tools. It's important to note, however, that even the greenest resource-efficient low-carbon building is a healthy place only when it also has been designed, built, and operated for human health and wellbeing.

Google Research: Biophilic Design Increases Employee Satisfaction

Biophilia, or love of life and living things, introduced through images, colors, textures, and materials from the natural world, can improve productivity, lower stress levels, and enhance learning comprehension.

Google uses biophilic design elements such as light, water, natural materials and patterns, and different perspectives of space and place in office settings. Surveys have shown that Google employees who can see design elements that mimic nature from their desk report 11 percent higher overall satisfaction with their workspace and 13 percent higher satisfaction with its colors and textures. And 15 percent say their building sparks creativity.

—Adapted from *The Snowball Effect of Healthy Offices*, CBRE 2016

The Value Proposition for Healthy Buildings and Workplaces

For most office tenants, a 1 percent improvement in productivity is worth far than \$1 per square foot (\$10.76 per square meter) per year. Healthy buildings can reduce turnover by 1 percent per year, saving individual companies \$150,000 to \$200,000 or more in finding, hiring, and training new employees.

ULI first examined the business case for healthy buildings in its 2014 report *Building for Wellness: The Business Case*. At the time, the WELL Building Standard was just coming on line and Fitwel was not available to private development. Since then, evidence has been growing that employees in healthy workplaces get sick less and are more productive. Employees say they are happier, more likely to want to work in a healthy workplace, and less likely to quit.

Some key drivers of the value proposition for healthy buildings, identified in general research, include the following:

Healthy buildings and workplaces can help businesses attract and retain top employees. Staff members are the most valuable resource per square foot for most organizations, typically accounting for 70 to 90 percent of business operating costs, so even a 1 percent improvement in productivity, a 1 percent decrease in missed work days, or a 1 percent reduction in annual employee turnover can have a major impact on a company's bottom line and competitiveness. For many employers, healthy work environments are proving to be a recruiting and retention tool, attracting the health-conscious employees they prefer.

Conventional building design and construction are recognized as a contributor to people's health problems. Studies have shown that people with sedentary jobs have twice the risk of cardiovascular disease compared with people with standing jobs, and workers exposed to higher noise in office environments have higher levels of adrenaline, a stress hormone. Simple enhancements like sit/stand desks and noise-dampening acoustic materials can help reduce these risks and stressors.

Workplaces designed and built for wellness create value by helping companies attract and retain top talent. A 2016 CBRE study, *Millennials: Myths and Realities 2016*, found that 78 percent of millennials see workplace quality as important when choosing an employer, and 69 percent said they would trade other benefits for a better workplace. Health and wellness—focused office environments communicate and enhance culture, brand, and corporate responsibility. They differentiate a workplace from those of competitors and demonstrate an investment in human capital. All of these factors can help reduce company operating costs and increase revenues and profits.

Healthier buildings can lead to employees who stay in their jobs longer, are more engaged, and are

A Work in Progress: The Building Owner's Business case for Healthy Building Certifications Is Still Evolving

Some sectors of the real estate industry, including real estate investment trusts (REITs), have been slower than others to pursue healthy building certifications. Though the benefits of a certified building are compelling to many tenants, uncertainties exist that may be holding some potential adopters back. These include:

- **Lack of clarity on total costs.** Because most building owners have not built many WELL buildings or pursued Fitwel certification on many properties, it is unclear what the soft costs will be for certifications. For owners of multitenant space, it may also be difficult to market a building as "healthy" when they do not know whether it will be able to achieve WELL or Fitwel certification until it is fully occupied.
- **Will certification translate into higher rents and lower vacancy rates?** While tenants see lower operating expenses from increased employee satisfaction, decreased turnover, and fewer sick days, there are not yet enough market comparables for WELL and Fitwel buildings to prove they lead to lower vacancy rates or higher rents.

- **Lease complications.** Tenants in Fitwel- and WELL-certified buildings must commit to specific actions related to building operation and tenant fit-out. If a tenant in a multitenant building balks at agreeing to those terms, an owner may lose out on a high-quality lease, or have to sacrifice their healthy building certification to close the deal.
- **Potential liability.** Some building owners have expressed concern over potential risk to their reputation and even legal risks associated with healthy building certification. Will people who get sick in a WELL/Fitwel building hold the owners accountable for their illness, even if the building was not responsible? Will tenants in an uncertified building ask why their building has not met healthy building standards?

Despite these uncertainties, many owners and developers report that certified buildings offer a way to appeal to tenants and secure future projects as the trend toward healthier buildings grows. They also believe that certified buildings show sustainability-conscious investors and tenants that they are committed to learning about the process so they can develop future healthy projects more efficiently. Many believe that healthy buildings eventually will lead to market differentiation and returns, such as above-market rents and better tenant retention.

absent less, translating into benefits for employers. Workplaces designed and constructed to support health and wellness have been shown to have benefits for retention and engagement of employees. According to a 2017 survey by CoreNet Global and CBRE of 211 senior executives in real estate, tech, and finance firms committed to workplace health and wellness design, 19 percent reported a decrease in absenteeism, 25 percent reported increased employee retention, and 47 percent reported increased employee engagement.

Although employee productivity is often difficult to quantify, the human resources department of most major organizations can estimate the operational cost of missed work days, employee turnover, and the ability to attract top talent. For example, a lawyer might cost \$2,500 per sick day in lost billable revenue. In a 50,000-square-foot office with 100 attorneys, one less sick day per employee per year leads to \$250,000 in extra income—\$5 per square foot per year.

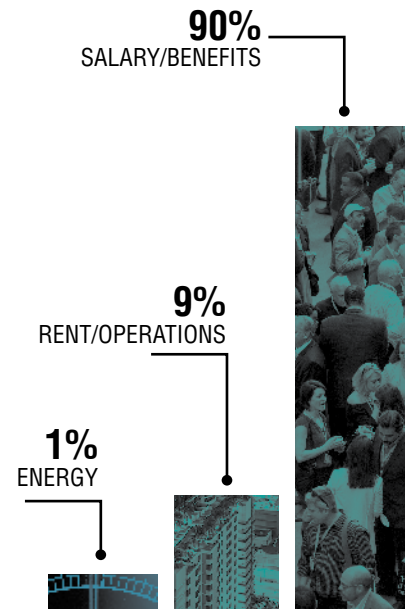
The return on investment for healthy buildings can be quantified. Data that quantifies the impact of healthy buildings on ROI and net operating income (NOI) for employers and developers is still emerging.

However, available data shows that there are benefits for employers and developers who adopt strategies to promote health and wellness through design.

In a survey of 200 Canadian building owners, 38 percent of those who reported increased value in healthy green buildings said they were worth at least 7 percent more than conventional ones, 46 percent said they were easier to lease, and 28 percent said they commanded premium rents, according to Building the Business Case: Health, Wellbeing and Productivity in Green Offices, a 2016 report from the World Green Building Council.

In a survey cited in The Drive Toward Healthier Buildings 2016: Tactical Intelligence to Transform Building Design and Construction, from Dodge Data & Analytics, 69 percent of building owners who had implemented healthy building features saw improvements in employee satisfaction and engagement, with 29 percent reporting what they termed a high level of improvement. The building owners said improving employee satisfaction was the best way to improve ROI—an even better value than reducing health care costs and increasing occupant productivity. A healthy workplace environment can have a significant impact on all three.

Invest in People for Return-On-Investment

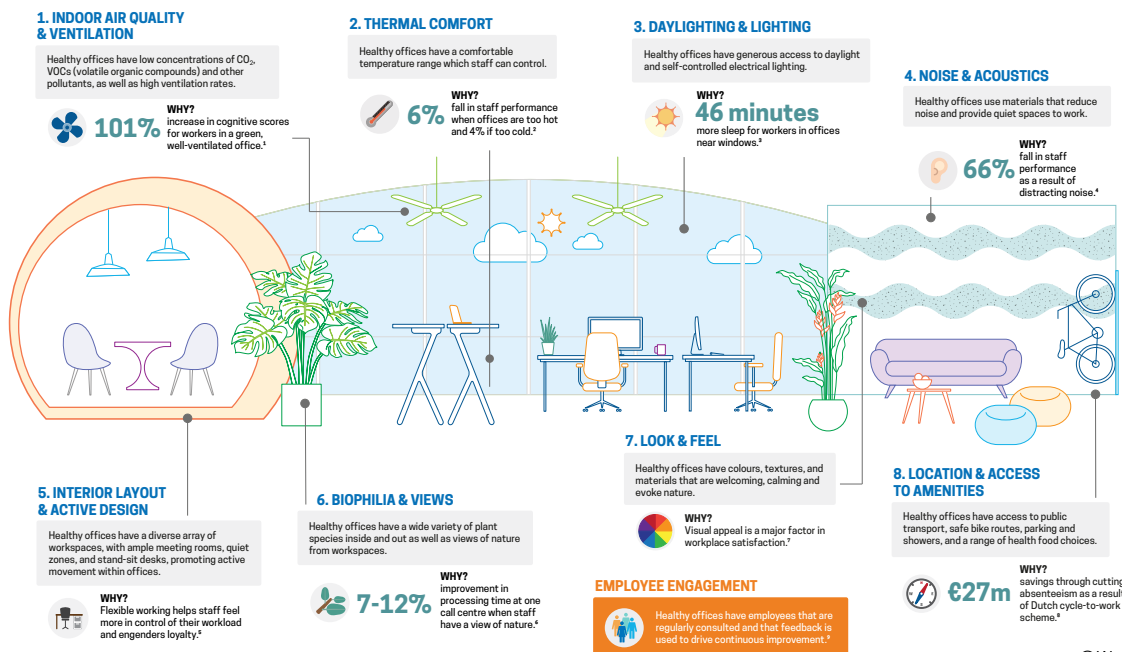


Source: Knoll Workplace Research: "What's Good for People Moving from Wellness to Well Being," Kate Lister 2004 Studies include those conducted by organizations including Harvard Business Review and World Economic Forum and the American Journal of Health Promotion.

Image courtesy of World Green Building Council Report "Health, Wellbeing & Productivity in Offices."

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EIGHT FEATURES THAT MAKE HEALTHIER AND GREENER OFFICES



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Increasingly, high-performance buildings are being designed and built to achieve both environmental and human health and wellness goals. In its 2016 report, the World Green Building Council highlighted eight key office features that helped promote health in the workplace.



PART II:

ULI Healthy Building Project Profiles

Introduction

By investing in health and wellness, building developers, owners, managers, and leasing companies can have a positive impact on people and the work done in their projects and workspaces. The definition of and business case for healthy buildings are still evolving, as are metrics and processes to evaluate the effectiveness of investments in human health and well-being.

The following project profiles provide a first-generation assessment of the business case for healthy buildings, illustrating the approaches of market-leading developers and employers who have developed, leased, or managed buildings that promote health and wellness and who pursued healthy-building certification. The projects profiled span a range of locations and building types, including tenant-led workplace fit-outs (CBRE, Arup), an owner-developed workplace (Genentech), and developer-built multifamily housing (Hollywood Proper Residences). Each early adopter has been in operation for over a year and has collected data on costs and benefits.

While building owners and tenants looked to quantify the value of their healthy-certified buildings and spaces, many found it difficult to capture an exact ROI for these projects. Instead, owners and tenants found through employee surveys and reports from their HR departments that their new spaces were improving employee satisfaction, reducing staff turnover, and improving their recruitment of new talent. In all cases, the long-term financial impact of these benefits significantly outweighed the cost of pursuing a healthy building certification.

Project leads shared insights about their decision to pursue healthy-building certification and which system to use, as well as the key building or interior design elements that helped their project achieve certification. These profiles illustrate how the spaces are performing, the measurable and intangible economic and wellness returns, and both expected and unexpected costs and benefits.

The evidence for a strong business case and value proposition is expected to grow as the market for and supply of health-promoting buildings and workspaces increases, and as real estate leaders gain experience designing, developing, leasing, and managing these projects.



CBRE Toronto and Vancouver Offices

CBRE at MNP Tower, Vancouver

Use: Class AAA commercial office

Size: 28,327 square feet within a 270,000-square-foot tower

Certifications: WELL Gold, LEED Gold

Key health and wellness features: Daylight/circadian lighting, ventilation/air quality, collaborative space, active staircase, sit/stand desks, ANSI-BIFMA furniture, filtered water, RISE Café

Cost: WELL—5 percent increase in capital costs

Value added: Overall employee satisfaction, employee recruitment/retention, enhanced landlord/tenant partnerships

CBRE has made a significant investment in healthy buildings, with six WELL-certified offices in its portfolio—including its Los Angeles headquarters, offices in Madrid and Vancouver, and three offices in the greater Toronto area. Three additional projects are registered for certification.

CBRE, the world's largest commercial real estate professional services firm, has committed to pursuing WELL certification for at least 100 buildings, sites, or offices managed by or associated with the company worldwide. It has also pledged to accredit at least 50 CBRE employees under the WELL Accredited Professional program. CBRE has found that "talent trumps rent"—that employee engagement and wellness rank well above cost on the list of factors that influence a tenant's real estate decisions.

"Our decision to pioneer WELL certification reflects our belief that the office environment can and should add to the health of our people, and that true market leadership is about taking bold steps for the future," says Mark Renzoni, president and chief executive officer of CBRE Canada. "CBRE employees have access to some of the healthiest offices in the world, and by being first movers, we are in a unique position to counsel our clients through the process."

Why Healthy Buildings?

Employee productivity and satisfaction were high on CBRE's list of reasons to build with a focus on health.

"The investment in human capital is top of mind for all employers," says Ashley O'Neill, vice president of corporate strategy and leader of CBRE Canada's healthy workplace initiative. "When employee salaries typically represent 60 to 70 percent of a company's overhead, small investments to create engaging workplaces can significantly impact talent retention and recruitment—and ultimately the bottom line." Today, the competition for talent is fierce, she says. "When millennials are choosing a company, they want to know whether a company is

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Between 2014 and 2018, CBRE Canada developed four new offices to meet the WELL building standard, first in Vancouver and then in Toronto, in three different classes of building. The company is responsible for four of the first ten projects in Canada to register for WELL certification and was the first Canadian firm to embrace the new standard across multiple locations.

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The healthy building features of CBRE's Vancouver office include universal access to natural light, ergonomic sit/stand desks, and a central café.

Health and Wellness Design Features: MNP Tower, Vancouver

In Vancouver, CBRE's pursued WELL certification for its workspace during construction of a new office building. Developer Oxford Properties Group collaborated with CBRE to earn WELL core and shell certification for the entire 35-story, 270,000-square-foot MNP Tower, located at Oxford Place in downtown Vancouver. CBRE's 28,327-square-foot interior space spans four floors of the MNP Tower. This marked the first time in Canada that a landlord and tenant partnered to achieve two types of WELL certification simultaneously—core and shell, and interior.

Designed by architects Kohn Pedersen Fox, the MNP Tower has won multiple design awards. The building's extensive glazing offers abundant daylight and sweeping views of the North Shore Mountains, expanding the perception of indoor space. CBRE's four-floor layout was designed to promote movement and collaboration.

To receive WELL certification, CBRE's Vancouver office was assessed, monitored, and tested across seven categories—air, water, nourishment, light, fitness, comfort, and mind. The office space incorporates more than 100 wellness measures, such as:

- A heating, ventilation, and air-conditioning (HVAC) system with air-quality testing in the top 1 percent of offices globally, which is better than in most homes
- Universal access to natural light, with all employees sitting within 25 feet of windows with views

- Ergonomic sit/stand desks to reduce sedentary behavior and alleviate lower back pain
- An internal active staircase connecting four floors to encourage employees to climb and collaborate (an internal elevator is available for movement-limited employees and clients)
- White-noise diodes installed throughout the office to dampen background noise
- Carbon-filtered water provided near workstations to encourage better hydration
- A central lunchroom, the RISE Café, where staff can take a break and eat together
- Regular fruit delivery in the Café and reduced-sized plates to promote healthy eating habits.

The MNP Tower's Oxford Playground includes a bouldering wall, a table tennis table, and an exercise room for yoga and group training classes. The tower shares health facilities with two other buildings in the Oxford Place complex. These include a 5,400-square-foot fitness center with state-of-the-art exercise equipment, men's and women's infrared saunas, and lockers. A bike facility offers private rentable bicycle lockers and storage rooms with a bike stand and tools available for repairs.

Health and Wellness Design Features: 145 King Street West, Toronto

In the greater Toronto area, CBRE renovated three office spaces in collaboration with building owners, earning a WELL Silver-certified workspace interiors distinction for each. CBRE faced challenges in outfitting all three offices regarding acoustics, the HVAC system, and lighting because of the age of the buildings.

CBRE's downtown Toronto office, built in the 1980s, is located on two floors of a 35-story, 400,000-square-foot office tower situated over a transit station in the heart of the financial district. In 2009, a whole-

building renovation earned LEED Gold certification for the operation and maintenance of an existing building, which was renewed in 2014. In 2015, CBRE approached the building manager, the QuadReal Property Group, with a proposal for a healthy fit-out for the firm's space.

QuadReal saw that healthy building certification was gaining awareness in the marketplace and wanted to work with CBRE "to create a market-leading example of WELL certification," says Jamie Gray-Donald, QuadReal's vice president of sustainability. CBRE is a highly



CBRE at 145 King Street West, Toronto

Use: Class A commercial office

Size: 38,850 square feet within a 400,000-square-foot tower

Certifications: WELL Silver

Key health and wellness features: Daylight/circadian lighting, ventilation/air quality, collaborative space, active staircase, sit/stand desks, filtered water, RISE Café

Cost: WELL—15 percent increase in capital costs

Value added: Overall employee satisfaction, employee recruitment/retention, enhanced landlord/tenant partnerships

influential tenant with significant presence in the Toronto commercial market, he says, and partnership with QuadReal enabled CBRE to promote certification to clients and facility managers in Toronto, as it had already done in Los Angeles after renovating its headquarters to the WELL standard.

“We also wanted to show that an older building can support tenants with advanced goals around health and well-being,” says Gray-Donald. One risk with commercial assets, he notes, is that older buildings can become obsolete, so managers and the owners they represent are always looking for features that attract top-tier tenants.

Working with QuadReal, CBRE renovated the 38,850-square-foot best-of-class real estate services office to incorporate new health and wellness features. CBRE managed the workplace strategy and design, procurement and construction process, and relocation of more than 250 employees. The design philosophy followed four key themes—wellness, choice, connection, and mobility—and included features such as:

- An HVAC system that produces air quality in the top 1 percent of offices globally, with fresh air pumped in from outside when increased levels of carbon dioxide are detected
- All desks within 25 feet of natural sunlight and views
- LED lighting that automatically adjusts to the brightness of the sunlight outside.

- Noise cancellation diodes that emit sound frequencies for comfortable background noise
- Sit/stand workstations for all employees, reducing sedentary behavior and back pain
- The choice of seven types of workspace for collaboration and focused or individual tasks
- Three times more collaborative meeting space than CBRE's previous office
- RISE Café, which brings people and departments together for meetings and healthy food.

Improving air quality and ventilation presented a particular challenge. In an unusual provision, QuadReal worked with CBRE to punch through the building's exterior wall to install fresh-air louvers that bring in outside air to refresh the air in the office.

Another challenge was finding furniture that met WELL's ANSI-BIFMA requirement for furniture tested for strength and safety by the American National Standards Institute (ANSI) standard-setting subgroup, the Business and Institutional Furniture Manufacturers Association (BIFMA). Furniture manufacturers increasingly produce furniture that uses highly sustainable and healthy materials, but the WELL requirements at the time were difficult to meet, which limited CBRE's selection options. CBRE worked with partners POI/Steelcase and Workplace Resource/Herman Miller to find furniture that met both WELL standards and CBRE's aesthetic goals.

Healthy Building Returns for CBRE Vancouver and Toronto

Post-occupancy, CBRE commissioned an employee survey through the Center for the Built Environment to evaluate the effect of its office transformation. The results were conclusive: general satisfaction with the building, workplace, office layout, office furnishings, thermal comfort, air quality, lighting, acoustic quality, and cleanliness and maintenance were universally well above the Center for the Built Environment benchmark score in all four of CBRE's WELL-certified offices.

“In the WELL-certified offices, the total employee turnover rate has fallen by almost a third and the hiring rate for new talent has doubled,” says O'Neill. WELL certification is “helping to differentiate us as an employer that is prepared to invest in the health and wellness of its people. Because WELL represents the leading edge of office design, it's also differentiating us as a commercial real estate adviser.”

CBRE did not create a separate capital budget to achieve WELL certification, but instead assessed the base building condition of each



CBRE's Toronto office features a wide range of collaborative meeting spaces, and seven types of workspace designed for collaboration and individual tasks.

“In the WELL-certified offices, the total employee turnover rate has fallen by almost a third, and the hiring rate for new talent has doubled.”

—Ashley O'Neill, vice president of corporate strategy and leader of CBRE Canada's Healthy Workplace Initiative

property and worked collaboratively with the landlord as part of its capital process. “We also elected to value-engineer down luxury finishes to accommodate more capital-intensive components of the certification program, such as lighting and furniture, within a set capital budget,” says O'Neill.

A post-occupancy survey of CBRE's Vancouver office indicated numerous significant returns: over 90 percent of employees reported a noticeable improvement in air quality, compared with their pre-certified

office space, and 90 percent reported feeling more energetic as a result of using sit/stand desks.

In CBRE's three Toronto offices, over 90 percent of employees reported overall satisfaction with their new offices and over 70 percent reported that the offices enhanced their ability to accomplish daily tasks, notes O'Neill. “For us, it's clear evidence of the power that a forward-thinking workplace can have in helping companies find and keep the best talent.”

Investing in Tenants for the Long-Term

For the downtown Toronto office, the value of participating in the WELL certification process, was a precedent-setting partnership with a top tenant, says QuadReal's Gray-Donald. “If building according to the WELL standard is an important part of a tenant's vision for their workplace and their community, we want to collaborate with them to bring that vision to life,” he said. Awareness of the value of this type of partnership is growing, he says, and QuadReal already has other large corporate office spaces in the Toronto pipeline that specify WELL certification.

In Vancouver, given the MNP Tower's simultaneous certification for core and shell and for interior space, says O'Neill, “We're now seeing a higher level of partnership between landlords and tenants.” Due to a low vacancy rate, Vancouver currently is a landlord's market, and the addition of a requirement for a healthy workplace to ensure tenants are getting what they need to recruit and retain talent has stepped up the game, she says.

“The landlords recognize the value of companies that have robust growth, who might take on additional space, and have to meet the

demands of their workforce,” says O'Neill. By working with tenants to enhance office space for health and well-being, landlords looking for a competitive advantage “now understand they can gain a competitive advantage and develop a better tenant roster.”

A number of projects in Vancouver are pursuing WELL core and shell certification, and WELL is being adopted by developers and owners “as a differentiation for new properties,” says O'Neill. Ten years ago, “LEED was a huge differentiation and indicated a commitment to sustainability. The market will look for the next competitive advantage, and in Vancouver, where wellness is part of the culture in general, healthy building certification provides that edge.”

“There is a sound business case for investing in a workplace that embraces a human-centric approach to office design,” says Loren Bergmann, managing director of workplace strategy for Western Canada at CBRE Canada. Given that most Canadians spend over half their waking hours in an office, “employers can have a sizable positive impact on 100 percent of the people who work in that space” by focusing on wellness in the workplace.



Arup Boston Office

Use: Commercial office

Size: 16,175 square feet

Certifications: WELL Gold; Fitwel 3 Star; LEED Platinum
ID+C: Commercial Interiors v4

Key health and wellness features: Daylight/circadian lighting, ventilation/air quality, collaborative space, sit/stand desks, kitchen, material transparency, filtered water

Cost: WELL: \$0.25 per square foot; Fitwel: \$6,500;
LEED: 2 to 3 percent of development costs

Value added: Design testing, improved productivity, attitude, collaboration, and social cohesion

The Boston office of the global design and consulting firm Arup is top-certified according to two health and wellness standards—WELL Gold and Fitwel 3 Star Rating—as well as LEED Platinum ID+C: Commercial Interiors v4 certification.

Arup had targeted WELL Silver and Fitwel 2 Star certifications to create an environment where employees could thrive in its fit-out design for 16,175 square feet of office space at 60 State Street in downtown Boston. But the design team, excited about the healthy building challenge, surpassed its goals by meeting WELL Gold standards, as well as the Fitwel 3 Star Rating. With the help of building owner Oxford Properties Group, Arup was the first firm in New England to be awarded WELL certification, in June 2017. The firm qualified for Fitwel certification in October 2017 and LEED in May 2018.

In 2016, after the office had outgrown its space in Cambridge, Massachusetts, Arup began planning for a new office in downtown

Boston. The team wanted to achieve the highest LEED level for commercial interiors and create a work environment that encouraged health and wellness. Arup also wanted the office to serve as a living laboratory to test designs and quantify the impact of health and well-being strategies for clients. Arup registered for WELL certification, and then just as Arup was about to move into the new office space, Fitwel certification standards were released for private development, and the firm seized that opportunity also.

“Arup is focused on environmental and human health outcomes, and these certification programs resonated with Arup’s core culture and values,” says Rebecca Hatchadorian, content expert for Arup’s healthy building certification process. “We wanted to see how the rating systems differed, and we wanted to be able to show clients how we met the different standards.”

Health and Wellness Design

From the start, the design team worked with Arup staff to understand what they sought in the office environment. A series of all-staff lunchtime workshops indicated that staff wanted a layout with more open collaboration spaces, but also needed quiet spaces without distraction for focused work.

Design team members, including Boston-based Dyer Brown Architects and Corderman & Company Inc. as general contractor, were joined by Arup’s consulting and engineering teams, who provided lighting design, acoustics, structural engineering, WELL consulting, and commissioning. The assessment involved a WELL-focused pre- and post-occupancy survey of all employees developed with in-house environmental psychologists and a custom-designed indoor environmental-quality sensor kit built by Arup programmers to stream real-time data.

The office’s open floor plan with many large windows allows every employee access to daylight and views. Active design principles and a

variety of seating and standing arrangements, along with portable laptop computers, encourage movement around the space. Arup installed motorized sit/stand desks that are integral to the workspace for every employee, one of the factors that qualified the firm for the higher WELL Gold certification. But employees no longer have to work at their desks all day. They can meet in various meeting areas, including the kitchen, which also has window access and serves as a breakout space. The kitchen serves healthy snacks such as fresh fruit and breakfast on Fridays.

Arup’s lighting team designed a circadian lighting system with controls that automatically adjust color and brightness to replicate the daylight cycle. A ventilation system optimizes air quality through filtration and ventilation rates that respond to occupancy levels. The water filtration system reduces chlorine and improves drinking water taste and quality to promote hydration. The office has showers for people who run or bike to work. Restroom sinks are designed to keep people from bumping the basin and coming into contact with germs when they wash their hands.



Arup's healthy building space features open collaboration spaces for all-staff lunch workshops, as well as several quiet spaces for focused work.

“We believe that working in a healthy building relates to employee performance, recruitment, retention, reduced absenteeism, embodiment of brand, and company culture.”

—Tim McCaul, Arup principal and Boston group leader

Arup sourced building materials and furnishings for sustainability and healthfulness, with half having a health product declaration (HPD) certification. That was one of the project's biggest challenges, says Hatchadorian. “The WELL building standard and LEED v4 standard were both so new, and few projects were in compliance with the HPD

requirements. It was hard at the time to find products with those declaration labels.” She says that more products are now available with transparency declarations, though the 50 percent threshold for a project is still a remarkable accomplishment.

Healthy Building Returns

“We believe that working in a healthy building relates to employee performance, recruitment, retention, reduced absenteeism, embodiment of brand, and company culture,” says Tim McCaul, Arup principal and Boston group leader.

The business case for Arup: the firm received a WELL discount as an early adopter and paid 25 cents per square foot to meet the certification standard. Arup figures that WELL certification added a 0.5 percent premium to the project, which the firm thought would be recouped financially with at least a 0.5 percent improvement in productivity. Fitwell cost \$6,500 for certification, while meeting LEED criteria amounted to a premium of 2 to 3 percent of development costs.

Another important return has been improvement in the staff's emotional well-being and attitude toward work. Employees' pre- and post-survey responses showed that 83 percent of staff felt that the new

office supported creative thinking and collaboration, compared with 37 percent for the previous office. Over two-thirds (68 percent) said their productivity was positively influenced by environmental conditions of comfort, lighting, and air quality, compared with 8 percent for the previous office, and 43 percent said they felt healthier in the new office, compared with 2 percent for the previous office.

Additional benefits included the positive reaction of staff who now bring more clients into the building, and requests by clients and other teams to have project meetings on site to enjoy the space. Arup is also seeing more collaboration around the lunch table now that the kitchen is a prime meeting space, which has encouraged cross-pollination of ideas and enhanced social cohesion among the staff.



Hollywood Proper Residences

Use: Residential hotel

Size: 292,000 square feet

Certification: WELL Silver Multifamily Residential

Key health and wellness features: Daylight/extensive glazing, ventilation/air quality, noise abatement, biophilic design, natural materials, pool, fitness center, filtered water

Cost: WELL: Reduced-fee Pilot Program; \$20,000 air quality testing

Value added: 80 percent leased six months after opening; top-of-market rents

Hollywood Proper Residences, a 200-unit luxury high-rise at the new Columbia Square mixed-use complex in the heart of historic Hollywood, California, was the world's first rental apartment building to earn WELL certification.

The \$140 million tower is one part of a complex of historic renovations and new construction spanning one city block that was redeveloped by Kilroy Realty Corporation, a publicly traded real estate investment trust (REIT) focused on the West Coast. A global leader in healthy buildings, Kilroy has developed ten Fitwel-certified buildings, the most of any private developer and owner worldwide. The firm earned WELL Silver certification for its first WELL project at Hollywood Proper Residences.

"As a market leader, we recognize the growing need to focus our portfolio on the health and wellness of our tenants and residents," says Chris Heimburger, Kilroy senior vice president of development.

Designed by GBD Architects in Portland, Oregon, and House & Robertson Architects in Culver City, California, and constructed by San Francisco-based Webcor Builders, the 292,000-square-foot, 22-story building was erected over a four-level parking garage and

features furnished and unfurnished extended-stay hotel suites. Opened in June 2016, it is located within the new 737,000-square-foot Columbia Square complex, which features five new LEED Gold office buildings and two renovated historic buildings, including the 1930s-era CBS broadcast studios. Columbia Square features retail, restaurant, corporate office, and coworking space targeted to the creative and entertainment industries.

Kilroy began revitalizing the Hollywood landmark district in 2012. In 2014, Kilroy became interested in the growing movement toward healthy buildings. The site was already conducive to health and wellness, given its transit-oriented location and sunny exposure, and Kilroy decided to register for WELL certification under a new pilot residential program.

"Everyone at Kilroy wanted to do a healthy building," in keeping with the firm's culture of building high-quality forward-thinking projects, says Sara Neff, Kilroy senior vice president for sustainability. Kilroy also liked the potential returns of providing healthy places to live in an exciting new mixed-use development located on a classic Hollywood block.

Health and Wellness Design Features

The residential tower demonstrates health-focused design with the following features:

- Performance-verified indoor air quality achieved through intensive fresh air exchange and innovative filters
- Natural building materials, such as aged hardwood floors and marble, which have lower levels of volatile organic compounds (VOCs) than synthetics used for carpeting, counter surfaces, and other finishes
- Extensive daylight access with nine-foot floor-to-ceiling soundproofed windows
- Acoustic comfort verified by consultants
- Biophilic environment with natural colors, materials, plants, and views
- 1,600-square-foot state-of-the-art fitness center
- Rooftop deck, pool, cabanas, and lounge
- Performance-verified drinking water quality
- Augmented green cleaning program
- Smoke-free environment
- Walk Score of 95.



Kilroy's Hollywood Proper Residences includes healthy indoor and outdoor space to encourage an active lifestyle, and biophilic design and materials to connect residents to the natural environment.

“As a market leader, we recognize the growing need to focus our portfolio on the health and wellness of our tenants and residents.”

—Chris Heimburger, Kilroy senior vice president of development

The tower includes one-, two-, and three-bedroom units and penthouses with private pools. The apartments and common areas were designed and constructed with natural and biophilic materials such as plants and aged-wood floors. The layout is modern and open, with floor-to-ceiling windows overlooking Los Angeles, the

surrounding mountains, and the Pacific Ocean. Resort-style amenities include a rooftop deck, pool, and lounge terrace; a lobby restaurant and coffee shop; a fitness center; and a 24-hour concierge service, which can locate a rental bike, boxing gym, or meditation class for tenants.

Healthy Building Returns

While no post-occupancy survey of the building occupants occurred, Neff says that Proper “was over-the-moon excited” about their first opportunity to operate a healthy building. The building was 80 percent occupied six months after opening, according to the most recent available data. Units command top-of-market rents in Hollywood, which have not been attainable for that area in recent years, says Neff.

WELL certification costs were relatively modest, says Neff. With WELL fees reduced because the project was a pilot, Kilroy’s major WELL expense was \$20,000 for additional filtration, both in the HVAC system and stand-alone, and for air quality testing.

Though Kilroy is pleased with the results, the WELL certification processes for the tower had challenges, says Neff, because the developer had to wait to do an air quality test in a finished building, and this meant that there were other factors that affected air quality

after people moved in with their possessions and pets. It took six months and multiple attempts to improve air quality through different rates of outdoor-air intake, high-tech filters, and cleaning regimes for Kilroy to pass final WELL performance verification tests. Neff says this likely was because the residential tower pilot program had no precedents. Fortunately, she says, Delos, the New York City–based wellness real estate and technology firm that founded IWBI, helped resolve issues during the certification process.

Comparing the two certification standards, Neff says that Fitwel is more straightforward and can be accomplished “after the fact,” because strategies relate more to operations than construction. Despite the challenges, Neff strongly supports healthy building certification, she says, because “many studies show these interventions do make an impact in your building.”



Genentech Building 34-The Hub

Use: Amenity building

Size: 68,000 square feet

Certifications: WELL Building Gold (pending), LEED v4 Gold

Key health and wellness features: Daylight/extensive glazing, ventilation/improved air quality, primary health care center, fitness center, active staircase, marketplace services, career lab, nursing mothers room, Zen garden, energy-cued color palette, art exhibits

Cost: Not provided

Value added: Increased use of healthy building services, improved employee recruitment/retention, higher employee engagement/satisfaction, industry leadership

Building 34, the new doughnut-shaped building on Genentech's South San Francisco campus, is helping the biotech firm meet sustainability goals and set high standards for its healthy workspace and lifestyle efforts.

Nicknamed "the Hub," the 68,000-square-foot, four-story campus community center is located in the center of Genentech's 200-acre U.S. headquarters campus. In collaboration with Genentech's site services team, the building was designed by Chicago-based Perkins+Will architects and built by San Francisco-based DPR Construction. It was certified LEED v4 Gold in August 2017 and is in the building performance verification stage for WELL Gold certification, anticipated in 2018.

"We are dedicated to the rigorous pursuit of science for all areas of our business," said Carla Boragno, vice president of site services. "We liked the way WELL was scientific and evidence based, complemented LEED certification, and took sustainability to the next level."

Genentech began planning Building 34 in 2013 by identifying specific goals focused on environmental sustainability and employee well-being. One stood out: to further differentiate Genentech in South San Francisco as a great place to work and to enhance the company's ability to attract and retain employees.

Health and Wellness Design Features

Genentech's healthy-building approach was developed to complement its strong environmental sustainability and health and well-being culture and policies. Most of the healthy and sustainable features of the building were not evaluated as individual line items only, but were integrated into decisions made throughout the design and construction

"Building upon our strong commitment to environmental sustainability and LEED certification, we recognized the impact that a healthy campus and building design have on the health of people who spend time there," says Hub project team lead Marlene Kosinski, who is responsible for Genentech's on-site health and wellness and ergonomics programs. "Our employees are the company's number-one asset, and we believe we can impact 100 percent of our workforce, helping them to be at their best by making it easy to make healthy choices."

Genentech's business case for healthy building certification included alignment with the project's four pillars—sustainability, well-being, community, and innovation—for the building and the company's culture. The company thought being an early adopter of WELL certification would position it at the forefront of innovation in the sustainable and healthy building movement. It also believed that achieving WELL certification would add measurable value to the health, well-being, productivity, and happiness of its employees. Leadership was reassured of the potential of healthy buildings to improve human health and wellness by the CogFx studies from Harvard University's T.H. Chan School of Public Health, which found that office workers in certified green buildings had higher scores for cognitive function, better environmental perceptions, and fewer health symptoms than those in high-performing, noncertified buildings.

process. That process focused on using healthy building materials: all were screened using the Perkins+Will precautionary list. The design team used universal design guidelines to create a welcoming and inclusive environment and employed active building guidelines to encourage movement.



“The Hub” at Genentech’s offices provides active fitness areas and quiet meditative spots to help promote health and wellness on campus.

“We liked the way WELL was scientific and evidence based, complemented LEED certification, and took sustainability to the next level.”

—Carla Boragno, vice president of Genentech’s site services

Building 34’s key healthy architecture, design, and program features include the following:

- Doughnut-shaped, glass-walled building that provides abundant natural light
- Views of San Francisco Bay and campus
- Primary care and occupational health center, with physical therapy, chiropractic, acupuncture
- First-floor marketplace with healthy food options, company store, bank, IT services bar, ergonomics showroom
- Filtered water throughout the building to encourage employees to drink more while reducing waste by using reusable water bottles
- Natural ventilation with a three-story atrium
- Manual windows for employee access to fresh air
- Central active staircase that encourages employees to get up and move throughout the day
- 35,000-square-foot fitness center with an NCAA-regulation basketball/multisport court
- Zen-like meditation roof garden providing quiet space for employees to get fresh air
- Rooms for nursing mothers
- Career lab offering career consultation services
- Curated art exhibits throughout the building
- Color palette on each floor determined by “energy level,” with highest red/orange energy level for the first-floor marketplace and calmest blue/green energy for the fourth-floor health center.

The Value of Healthy Building

Genentech looked for value on investment (VOI) as the measurement of success for healthy building features in the Hub, particularly through use of building services. During the first year of operations, impact ranged from a 22 percent increase in use of the career lab to a 153 percent increase in use of the health center by employees compared with their previous locations on campus. The company expects that its commitment to employee health and well-being will

help it attract and retain talent, support employee engagement, and contribute to better worker health and lower health care costs.

Genentech also anticipates returns such as strong employee engagement scores, post-occupancy surveys that show high satisfaction levels, and greater use of services—especially the fitness center, health center, ergonomics showroom, and career lab.



References

- ASID HQ Office, Impact of Design Series Vol. 1, and Design Impacts Lives, ASID HQ Office Research, Pre/Post-Occupancy Analysis 2017. American Society of Interior Designers (ASID). <https://www.asid.org/news/asid-releases-comprehensive-research-study-on-the-impact-of-design-in-the-workplace>
- Build Well to Live Well: Wellness Lifestyle Real Estate & Communities. January 2018 Research Report, Global Wellness Institute. https://www.globalwellnesssummit.com/wp-content/uploads/2018/06/2018Research_BuildWelltoLiveWell_v12FINAL53118_web.pdf.
- Building for Wellness: The Business Case. Washington, DC: Urban Land Institute, 2014.
- Building Healthy Places Toolkit: Strategies for Enhancing Health in the Built Environment. Washington, DC: Urban Land Institute, 2015.
- Building the Business Case: Health, Wellbeing, and Productivity in Green Offices. World Green Building Council, 2016. <http://www.worldgbc.org/news-media/building-business-case-health-wellbeing-and-productivity-green-offices>.
- Doing Right by Planet and People: The Business Case for Health and Wellbeing in Green Building. World Green Building Council, April 2018. <http://www.worldgbc.org/news-media/doing-right-planet-and-people-business-case-health-and-wellbeing-green-building>.
- The Drive toward Healthier Buildings: The Market Drivers and Impact of Building Design and Construction on Occupant Health, Well-Being and Productivity. McGraw Hill Construction Smart Market Report, 2014.
- The Drive toward Healthier Buildings 2016: Tactical Intelligence to Transform Building Design and Construction. Dodge Data & Analytics SmartMarket Report. www.worldgbc.org/sites/default/files/Drive%20Toward%20Healthier%20Buildings%202016_ffff.pdf.
- The impact of working in a green certified building on cognitive function and health (CogFx study). Piers MacNaughton, Usha Satish, Jose Guillermo Cedeno Laurent, Skye Flanigan, Jose Vallarino, Brent Coull, John D. Spengler, Joseph G. Allen, Building and Environment 114 (2017) 178–186.
- The 9 Foundations of a Healthy Building. Harvard T.H. Chan School of Public Health, 2017. http://forhealth.org/Harvard.Building_Evidence_for_Health.the_9_Foundations.plIntersections: Health and the Built Environment. Washington, DC: Urban Land Institute, 2013.
- Millennials: Myths and Realities. CBRE, 2016.
- The Snowball Effects of Healthy Offices. CBRE, 2016. <https://www.cbre.com/netherlands/healthy-offices-research>
- Wellness in the Workplace: Unlocking Future Performance. CBRE 2016.www.cbre.eu/emea_en/IMGS_STYLES/docs/CBRE101211%20Wellness%20in%20the%20Workplace_FINAL.PDF



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